

## CLAIMS

What is claimed is:

1. A method for calculating CRC values in a data transmission system having a data bus wherein the number of data blocks containing valid data on said data bus is variable,  
5 said number of data blocks comprising a group, and at least one of said groups comprising a data segment, said method comprising the steps of:

- a) determining the number of data blocks on said data bus;
- b) calculating a CRC value in accordance with a predetermined algorithm, as determined by said number of data blocks; and
- 10 c) appending said CRC value to said segment.

2. The method of claim 1 wherein said steps of:

- a) simultaneously calculating a CRC value for each possibility of said plurality of data blocks containing valid data; and
- 15 b) selecting a correct calculated CRC value based on the number of said data blocks.

3. The method of claim 1 wherein said calculated CRC values are variable between a value based on a data block single block up to a value based on a group of said data blocks.

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4. The method of claim 1 wherein said segment includes at least one data block.

5. A System for generating CRC values in a Data Transmission System having a data bus adapted for handling a plurality of data blocks in parallel, said plurality of data  
25 blocks comprising a data segment, said System comprising:

- a) a memory for storing data blocks, said memory adapted to output a plurality of data blocks simultaneously;
- b) a data bus, coupled to said memory, said data bus providing a data path wide enough to accommodate said plurality of data blocks;
- 30 c) a plurality of CRC cores coupled to said data bus; and

d) a first multiplexer coupled to said CRC cores for selecting the output of one of said CRC cores based on the number of data blocks output on said data bus.

6. The System of claim 5, wherein said plurality of CRC cores includes a CRC core  
5 for calculating a CRC value for every combination of data blocks on said Data Bus.

7. The System of claim 5, further including a second multiplexer coupled to the output of said first multiplexer for initializing said CRC cores with a seed value for use in calculating said CRC value.

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8. The System of claim 7, where said CRC value is calculated according to a predetermined algorithm and is based on said seed value and the data in said data blocks.

9. The System of claim 5, further including means for appending said CRC value to  
15 said data segment.

10. The System of claim 5, wherein said CRC value has the same granularity as said data blocks.

20 11. The System of claim 5, wherein said memory includes a non-volatile data storage device.

12. A circuit for calculating CRC values comprising:

a) a memory for storing data blocks, said memory including a plurality of outputs  
25 for simultaneously outputting data segments having a plurality of data blocks;

b) a data bus, coupled to said memory, said data bus having a data path for each of said data blocks;

c) a plurality of registers coupled to said data bus, said registers for temporarily storing data blocks within a data segment output from said memory, wherein said  
30 registers are adapted for storing any combination of data blocks within said data segment;

d) a plurality of CRC cores coupled to each of said respective registers, said CRC cores for calculating CRC values for the data blocks stored in each of said registers; and

5 e) a multiplexer for selecting the CRC value calculated by one of said CRC cores, based on which of said plurality of registers contain valid data.